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The North American Cuckoo Wasps of the Genus **PARNOPES.**

BY HENRY L. VIERECK.

In the preparation of this paper types of all species, except *chrysoprasina* Smith, and *fulvicornis* Cameron have been examined. For the loan of *aglaspidula* and *westcotti* the writer is indebted to Mr. A. L. Melander.

KEY TO SPECIES.

- Postscutellum entire1.
 Postscutellum notched.....2.
1. Greenish, tinged with blue, sometimes blue, sometimes tinged with copper; terminal segment more triangular. In the ♂ there is a punctured suture between the pronotum and mesonotum; 10 mm. or less.
edwardsii.
- Blue, tinged with green, terminal segment more quadrate. In the ♂ there is a broad granular suture between the pronotum and mesonotum; 10 to 12.5 mm.....**hageni.**
- Royal blue; 8-9 mm**henshawi.**
2. Apical segment of abdomen with a median carina, terminating anteriorly in a narrow smooth space posteriorly separating the two subapical grooves3.
 No median carina on apical segment4.
3. Blue and green; tegulae entirely blue and green**aglaspidula.**
 Cupreous and green, tegulae with a narrow yellow margin.....**concinna.**
 Blue and green and cupreous, tegulae sienna, with a yellow margin..**festiva.**
4. Tegulae yellow5.
 Tegulae dark6.
5. Cupreous, with green reflections**diadema.**
 Green, with cupreous reflections.....**westcottii.**
6. Tegulae black, with a pale margin.....**chrysoprasina.**
 Tegulae largely yellow, dark on disc.....7.
7. Small species, with distinct silvery bands of pubescence.....**tæniata.**
 Large species, with no silvery bands8.
8. Process of postscutellum quadrate, with a short narrow notch, process not distinctly elevated.....**excurvata.**

The size (9 mm.), fulvous postscutellum and bluish abdomen of *fulvicornis* are sufficient indications that this species is distinct from any other North American form.

Parnopes edwardsii Cress.

June 27, 1882, Camp Umatilla, Washington (Henshaw). A male and female, deep blue.

Parnopes hageni n. sp.

♀. 12 mm. *Head*.—Face with a cuneiform flat depression, of which the base lies between the insertion of the antennæ, and the apex about in the middle of the space between the anterior ocellus and the antennæ, a shining punctured cuneiform space diverges obliquely to each side of the central depression; the rest of the face with contiguous punctures like on the cheeks; punctures of clypeus contiguous, but smaller than those on the face, the sides of the clypeus convex, its anterior margin curved in, no posterior nor lateral suture; malar space present but not higher than the terminal joint of the flagellum is wide.

Thorax.—Pronotum seen from above presents three lateral points, an anterior and posterior, and the third one-fourth the length of the pronotum from the anterior point and extending laterad further than the anterior point, surface of pronotum uneven, punctures contiguous, from one-half to again as large as those on the head; mesonotum narrower behind than in front, punctured like the pronotum, parapsidal grooves distinctly arched posteriorly, straight anteriorly separating the median dark space from the parapsides, median dark space rugulose, punctured like the cheeks, and near the posterior border punctured like the parapsides, posterior half of parapsides with a slight longitudinal depression; punctures of tegulæ strong, partly contiguous, partly separated; mesopleura triangular, with sharp edges, sculpture like the pronotum and with an oblique narrow space reticulated; scutellum sharply separated from the mesonotum and postscutellum, postlateral edges rugulose, otherwise punctured like the pronotum or nearly, a deep oval pit on each side near the tegulæ; postscutellum with a quadrate produced portion extending slightly upward and backward nearly beyond the metathorax, the produced portion sculptured much like the scutellum, the edge sharp, sides of postscutellum rugulose, separated from the metathorax by a slight ridge, process as broad at apex as at base.

Abdomen.—First abdominal segment about three times as broad as long, slightly narrower anteriorly than posteriorly, anterior edge curved, deeply depressed in three places, the median depression deepest, on the disc is a smooth space; disc with large irregularly separated punctures on the sides, the punctures are adjoining and decidedly smaller than on the disc; second segment not quite so long as the first, punctures on the anterior margin shallow small and adjoining the rest of the segment like the first, the posterior lateral angles produced into a sharper tooth than the corresponding angles on the first, a median longitudinal impunctate space is present; third segment as long as the first and second, its brownish nonspinose edge (corresponding to the lateral brownish edges of the second segment) extending about as far as the length of the second segment, and to this extent the sides of the third segment are parallel; beyond the abdomen forms a rather obtuse angle which is rounded; the edge is irregularly spinose and has about twenty short blunt visible spines, depressions deep, parallel, with the oblique edges of the segment and about one-third as long as the segment, punctures adjoining, except at base and apex, where they are separated by smooth spaces, a narrow longitudinal impunctate space on the dark portion of the third segment.

Color.—Deep blue to purple, with greenish reflections and tints, base of segments purple and blackish, clypeus and mesonotum anteriorly black, the black part of mesonotum with two faint longitudinal raised lines extending back from the anterior margin, flagellum and greater part of mandibles and venter black, middle of mandibles and all tarsi brownish.

Covered with silvery pubescence, which is most apparent on the face.

♂. 12.5 mm. First abdominal segment about four times as wide as long and without a median impunctate space; second segment distinctly shorter than the first, median space hardly indicated; third segment a little longer than the second, with only a suggestion of a smooth space; edge of fourth segment with the spines stronger and more abundant than in the female.

Type locality, Yakima City, Washington. Type, Mus. Comp. Zool. Camb. ♀, July 2, 3, 4, 1882, Yakima City, Wash.; June 27, 1882, Camp Umatilla, Wash. ♂, June 30, 1882, Lone Tree, Yakima River, Wash.; June 27, 1882, Camp Umatilla, Wash.; June 25, 1882, Umatilla, Or. (Hagen and Henshaw).

Parnopes henshawi n. sp.

♀. 9 mm. *Head*.—With no cuneiform shining punctured area diverging from the central cuneiform depression.

Thorax.—Parapsidal grooves distinct, the sculpture of the space between the parapsidal grooves anteriorly not very different from the sculpture of the parapsides as in *hageni*, except on the extreme anterior border where the sculpture is close and the integument blackish; oblique oblong reticulate space of the mesopleura bounded by a sharp ridge behind; postscutellum broader at base than at apex.

Abdomen.—First abdominal segment about three times as broad as long, with a slight median impunctate space; second abdominal segment with the median longitudinal impunctate space starting as a rugulose depression, no impunctate space on the third segment.

Color.—Almost entirely purple or blue, tibiae with some green, tarsi various shades of brown, flagellum and mandibles black and brown.

Silvery pubescence most abundant on the head.

♂.—Scutellum not so sharply separated from the mesonotum as from the postscutellum, punctured so as to appear reticulate, the lateral oval pit and small space adjoining finely rugulose; postscutellum with the quadrate production extending outwards and slightly upwards, gently rounded, wider than long, not excavated on the superior plane, but imperfectly reticulate.

Abdomen.—First segment about three times as broad as long, slightly narrower anteriorly than posteriorly, anterior edge curved, not deeply depressed in three places, only slightly punctured as in *hageni*; second abdominal segment as in *hageni*, but the median impunctate space is replaced by a densely punctured, dull, slight groove, distinctly depressed one-fourth; a median densely punctured, dull groove extending over the third segment, distinctly depressed one-fourth; only about twelve prominent spines on the edge of the apical segment.

Color.—Purple and blue, tibiae and mandibles partly, tarsi entirely brownish, flagellum black.

Pubescent, with silvery hairs, most abundant on the head, nowhere hiding the sculpture.

Type locality, Umatilla, Oregon. Type, Mus. Comp. Zool. Camb. ♀, June 24, 1882, Umatilla, Or.; June 27, 1882, Camp Umatilla,

Wash.; June 24, 1882, Umatilla, Or.; June 27, 1882, Camp Umatilla, Wash.

Parnopes aglaspidula Mel. and Brues.

♀, July 13, 1900, Lehigh Gap, Lehigh Co., Pa.

Parnopes conciuna n. sp.

♀. 10 mm. *Head*.—The depression above the insertion of the antennæ not triangular, but forming a smooth basin with a median impunctate line; malar space practically wanting.

Thorax.—Pronotum seen from above presenting only two lateral points forming the anterior and posterior corners; parapsidal grooves absent, median black space more closely punctured than the rest of the remaining parts of the mesonotum; mesonotum and mesopleura as in *hageni*; scutellum not sharply separated from mesonotum; postscutellum as in *hageni*.

Abdomen.—First segment rather deeply depressed in three places, otherwise as in *henshawi*; second segment with a median longitudinal impunctate space, punctures larger than on the mesonotum, but separated; punctures of third abdominal segment adjoining and as coarse as on the second, no median impunctate space; terminal segment with about eighteen irregular spines on the edge, depressions as in *hageni*, punctures uniform, adjoining, except at the base, where they are separated.

Color.—Greenish, beautifully ornamented with copper color and coppery reflections, sutures and depressions of abdomen green, blue and purple. Thinly pubescent, distinct silvery lateral bands of appressed pubescence on segments one and two.

Type locality, Florence, Arizona. Type, Acad. Nat. Sci. Phila. ♀, May 23, 1903 (C. R. Biederman).

Parnopes diadema n. sp.

♀. 7 mm. *Head*.—Face concave, smooth, covered with a dense appressed pubescence; front with separated punctures and an irregular shallow pit; clypeus with rather indistinctly defined separated punctures; malar space inconspicuous.

Thorax.—Only an anterior and posterior point apparent on each side of the pronotum, pronotum with a distinct depression in the middle, mesonotum with no distinct parapsidal grooves, the median dark space uniformly but not so coarsely punctured as the parapsides; sculpture of mesopleura hidden by appressed silvery pubescence; sculpture of the posterior lateral corners of the scutellum hidden by appressed silvery pubescence, other parts of the scutellum punctured like the pronotum; process of postscutellum with parallel sides, the nonproduced part of the postscutellum hidden by appressed silvery pubescence.

Abdomen.—With a distinctly depressed margin on the segments; first segment deeply depressed only in the middle of the anterior face, no smooth space on the superior face, sculpture of the margin obscured by the appressed silvery pubescence, which is not so dense as on the mesopleura; second segment not so long as the first, sculpture and pubescence the same; third segment about as long as the preceding segments together, about thirteen strong spines on the apical mar-

gin which is pale brown, lateral margins pale, apical half of the segment, except extreme apex, with the sculpture hidden by appressed silvery pubescence.

The male differs from the female only in the usual sexual characters

Type locality, Florence, Arizona. Type, Acad. Nat. Sci. Phila. ♀, July 23, August 23, 1903; ♂, August 23, 1903, Florence, Arizona (C. R. Biederman).

Parnopes chrysoprasina Sm.

New Jersey.

Parnopes tæniata n. sp.

♀. 8 mm. *Head*.—Face as in *diadema*, front longitudinally depressed below the anterior ocellus; no malar space present.

Thorax.—Pronotum seen from above presents three lateral points, the middle one most pronounced, a depression filled with pubescence is present in the middle of the pronotum; mesonotum with visible but rather indistinct parapsidal grooves, punctures in the space between the parapsidal grooves smaller and closer than those on the parapsides; sculpture of mesopleura hidden by appressed silvery pubescence; posterior lateral corners of scutellum and sides of postscutellum as in *diadema*, process of the postscutellum a little broader at apex than at base.

Abdomen.—Segments with a sharply defined depressed margin; first segment visibly depressed in three places, the median depression deepest, no longitudinal smooth space, punctures large and separated, the margin or apical fourth of the segment rugulose, the sculpture nearly hidden by pubescence; segments two and three with the apical third rugulose and covered by pubescence, base of these segments with small punctures, medially with large punctures, apical third of third segment covered with dense pubescence, the margin testaceous and with about sixteen strong spines.

Color.—Blue, with some purple and greenish reflections, antennæ and legs largely testaceous, scape and femora blue.

Type locality, E. Washington. Type, Am. Ent. Soc. Phila.

Parnopes arizonensis n. sp.

♂. 10.5 mm. *Head*.—Face bare, depressed to form a shallow smooth polished basin; front punctured as strongly as the vertex and cheeks; no malar space.

Thorax.—Pronotum seen from above presenting an anterior and posterior lateral point, only a slight median depression anteriorly; parapsidal grooves on the mesonotum visible but not distinct, the punctures on the surface between them smaller and closer together than those on the parapsides; mesopleura bare or nearly traversed obliquely by a shallow channel; posterior lateral corners of the scutellum and sides of the postscutellum not densely pubescent; process of the postscutellum broader in the middle than at base or apex.

Abdomen.—The depressions on the anterior face of the first abdominal segment not very distinct, no long smooth space, punctures large and adjoining, depressed margin not sharply defined, nor is the nearly rugose sculptured area hidden by pubescence; second and third segments like the first; fourth segment with a black margin bearing about eleven strong spines, rounded at apex, not triangular in outline.

Color.—Green, with bluish reflections, sutures of abdomen deep blue and purple; antennæ black, scape green; legs brownish, tibiæ greenish, femora green.

Type locality, Florence, Arizona. Type, Acad. Nat. Sci. Phila. ♀, May 23, 30, 1903, Florence, Arizona (C. R. Biederman).

***Parnopes excurvata* n. sp.**

♀. About 10 mm. long. *Head*.—Face pubescent but not densely, the depressed area punctured, the sculpture of the front above the end of the scape similar to that on vertex and cheeks; malar space present but not as long as the terminal joint of the flagellum.

Thorax.—Sides of the pronotum seen from above presenting an anterior and posterior point with a bulged portion between; mesonotum with indistinct parapsidal grooves, the space between more closely punctured than the parapsides; mesopleura pubescent, like the face in part at least, traversed by an oblique rather distinct fovea or groove; scutellum sharply separated from the adjoining segments, *i. e.*, with distinct sutures; process of postscutellum distinctly wider at apex than at base, the emargination not quite so wide as the prong; posterior lateral corners of the scutellum and sides of the postscutellum pubescent like the face.

Abdomen.—Anterior face of the first segment depressed in three places, the median depression very well marked; segments with small punctures at base, large separated punctures in the middle, no long median impunctate space; apical margins of segments rugulose and with a distinct narrow band of pubescence laterally; apical segment with the depressions filled with dense silvery pubescence and not very deep, beyond the depressions the segment is testaceous, the edge subemarginate, with about fifteen large spines.

Color.—Green, with bluish reflections; process of postscutellum black or nearly, antennæ and legs dark testaceous to brown, scape and femora darkest, and green on one side.

Type locality, Florence, Arizona. Type, Acad. Nat. Sci. Phila. Florence, Ariz. (C. R. Biederman).